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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/715,267	11/17/2003	Nathan R. Brown	2269-4375.1US (99-1029.01)	4590
24247	7590	04/05/2006	EXAMINER	
TRASK BRITT P.O. BOX 2550 SALT LAKE CITY, UT 84110			MACARTHUR, SYLVIA	
			ART UNIT	PAPER NUMBER
			1763	
DATE MAILED: 04/05/2006				

Please find below and/or attached an Office communication concerning this application or proceeding.

C4

Office Action Summary	Application No. 10/715,267	Applicant(s) BROWN, NATHAN R.	
	Examiner Sylvia R. MacArthur	Art Unit 1763	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 11 January 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1 and 3-21 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1 and 3-21 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 17 November 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Terminal Disclaimer

1. The terminal disclaimer filed on 1/11/2006 disclaiming the terminal portion of any patent granted on this application which would extend beyond the expiration date of US6,899,607 has been recorded and is being reviewed for approval.

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Art Unit: 1763

2. Claims 1 and 6-15 are rejected under 35 U.S.C. 102(e) as being anticipated by Kajiwara et al (US 6,623,343).

Kajiwara et al teaches a system and method for CMP head having a multiple pressure annular zone subcarrier material removal control.

Regarding claims 1,6, and 10:Kajiwara et al teaches providing a plurality of abutting concentric tubular pressure rings or bladders (pressurization structures) 255 such that a region is polished at different pressures than the surrounding regions.

Regarding claims 7 and 8: Kajiwara et al teaches the use of both positive pressure (pressurized gas or fluid, see col.18 lines 60-65) and negative pressure (col.24 lines 1-10).

Regarding claim 9: CMP is taught in col.20 lines 17-37.

Regarding claim 11: The raised area is the basis of using different pressure along the wafer, this problem was observed by Kajiwara et al and discuss in col.2 lines 51-59.

Regarding claims 12,13, and 15: see col. 20 lines 16-37.

Regarding claim 14: Kajiwara et al teaches the use of other wafers in the paragraph joining col. 24 and 25.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary

Art Unit: 1763

skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 3-5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kajiwara et al in view of Chen et al (US 6,436,828).

The teachings of Kajiwara et al were discussed above.

Kajiwara et al fails to teach the use of magnetic force to bias the wafer.

Chen teaches the use of magnetic force as a means to provide a downward force across the substrate.

The motivation to provide a magnetic force (in the form of magnetically sensitive particles) to bias the wafer magnetically is that this type of force is shown by Chen to provide enhanced control on the uniformity of force applied to the substrate, see col. 4 lines 45-60. Thus, it would have been obvious for one of ordinary skill in the art at the time of the claimed invention to provide a magnetic force as the means to bias the wafer and provide a more optimal CMP result.

5. Claims 16-31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sommer or Chen et al in view of Williams (US 6,594,542).

Sommer teaches a linear drive system for CMP.

The method of Sommer teaches selectively applying a plurality of different amounts of pressure to different, selected locations of a backside of the semiconductor device structure and a polishing or planarizing at least one layer of the surface of the semiconductor device structure, see the abstract and col. 15 lines 5-67. Sommer teaches

Art Unit: 1763

at least one raised surface has been located and the adequate pressure applied to planarize
see col. 16 lines 3-32.

Chen et al teaches CMP using magnetic force.

The method of Chen et al teaches selectively applying a plurality of different
amounts of pressure to different, selected locations of a backside of the semiconductor
device structure and a polishing or planarizing at least one layer of the surface of the
semiconductor device structure, see abstract col. 6 lines 23-31.

Sommer and Chen et al fail to polishing a second semiconductor structure based on the
applied pressure of the first.

Williams teaches a method and system for controlling CMP removal.

Col.6 teaches that after the completion of the polishing process, a thickness measurement
is taken by metrology device 300. A second wafer is then polished using that data.

The motivation to modify the teachings of Sommer or Chen et al is to enhance the
capabilities of the apparatus from the application of pressure to a specific wafer to wafers
in an entire lot or batch. The combined teachings of Sommer or Chen et al and Williams
will increase throughput.

Regarding claims 26-28: Sommer teaches magnets are used according to col. 15
lines 47-67. Chen teaches the use of magnets to apply pressure in the abstract and the title
of his patent.

Response to Arguments

6. Applicant's arguments, filed 1/11/2006, with respect to the rejection(s) of claim(s) 1 and

Art Unit: 1763

315under Sommer, Chen and Williams have been considered but are moot in view of the new ground(s) of rejection. Prior art by Kajiwara et al has been provided to anticipate the newly present limitation "biasing independently movable pressurization structures". Kajiwara et al illustrates this limitation in Fig 9.

Regarding applicants arguments surrounding claims 16-31. The examiner notes that applicant argues that the prior art of Sommer or Chen in view of Williams fails to suggest a method of locating raised areas of the first substrate. The examiner disagrees and notes that applicant fails to claim how the locating step occurs other than with metrology which is taught by Williams. Williams teaches a pre-polishing and post-polishing measurement of the thickness of the wafer. The deviation between these measurements is the portion of the layer remaining and thus the raised portion and whether the polishing step was adequate. Williams further teaches that results from the measurements are used to devise a polishing recipe for the next wafer.

Conclusion

7. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37

Art Unit: 1763

CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sylvia R. Macarthur whose telephone number is 571-272-1438. The examiner can normally be reached on M-F during the core hours of 9 a.m. and 3 p.m.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Parviz Hassanzadeh can be reached on 571-272-1435. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Sylvia R MacArthur

Patent Examiner

Art Unit 1763

April 1, 2006



PARVIZ HASSANZADEH
SUPERVISORY PATENT EXAMINER